EXERCISE 2.3

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Solve the following equations and check your results.

1. 3x = 2x + 18

Solution:

3x = 2x + 18

⇒ 3x – 2x = 18

⇒ x = 18

Putting the value of x in RHS and LHS, we get, 3 × 18 = (2 × 18) +18

⇒ 54 = 54

⇒ LHS = RHS

2. 5t – 3 = 3t – 5

Solution:

5t – 3 = 3t – 5

⇒ 5t – 3t = -5 + 3

⇒ 2t = -2

⇒ t = -1

Putting the value of t in RHS and LHS, we get, 5× (-1) – 3 = 3× (-1) – 5

⇒ -5 – 3 = -3 – 5

⇒ -8 = -8

⇒ LHS = RHS

3. 5x + 9 = 5 + 3x

Solution:

5x + 9 = 5 + 3x

⇒ 5x – 3x = 5 – 9

⇒ 2x = -4

⇒ x = -2

Putting the value of x in RHS and LHS, we get, 5× (-2) + 9 = 5 + 3× (-2)

⇒ -10 + 9 = 5 + (-6)

⇒ -1 = -1

⇒ LHS = RHS

4. 4z + 3 = 6 + 2z

Solution:

4z + 3 = 6 + 2z

⇒ 4z – 2z = 6 – 3

⇒ 2z = 3

⇒ z = 3/2

Putting the value of z in RHS and LHS, we get,

(4 × 3/2) + 3 = 6 + (2 × 3/2)

⇒ 6 + 3 = 6 + 3

⇒ 9 = 9

⇒ LHS = RHS

5. 2x – 1 = 14 – x

Solution:

2x – 1 = 14 – x

⇒ 2x + x = 14 + 1

⇒ 3x = 15

⇒ x = 5

Putting the value of x in RHS and LHS, we get, (2×5) – 1 = 14 – 5

⇒ 10 – 1 = 9

⇒ 9 = 9

⇒ LHS = RHS

6. 8x + 4 = 3 (x – 1) + 7

Solution:

$8x + 4 = 3 (x – 1) + 7$

$\Rightarrow 8x + 4 = 3x – 3 + 7$

$\Rightarrow 8x + 4 = 3x + 4$

$\Rightarrow 8x – 3x = 4 – 4$

$\Rightarrow 5x = 0$

$\Rightarrow x = 0$

Putting the value of x in RHS and LHS, we get, $(8\times0) + 4 = 3 (0 – 1) + 7$

$\Rightarrow 0 + 4 = 0 – 3 + 7$

$\Rightarrow 4 = 4$

$\Rightarrow$ LHS = RHS

7. x = 4/5 (x + 10)

Solution:

$x = 4/5 (x + 10)$

$\Rightarrow x = 4x/5 + 40/5$

$\Rightarrow x – (4x/5) = 8$

$\Rightarrow (5x – 4x)/5 = 8$

$\Rightarrow x = 8 \times 5$

$\Rightarrow x = 40$

Putting the value of x in RHS and LHS, we get,

$40 = 4/5 (40 + 10)$

$\Rightarrow 40 = 4/5 \times 50$

$\Rightarrow 40 = 200/5$

$\Rightarrow 40 = 40$

$\Rightarrow$ LHS = RHS

8. 2x/3 + 1 = 7x/15 + 3

Solution:

$2x/3 + 1 = 7x/15 + 3$

$\Rightarrow 2x/3 - 7x/15 = 3 - 1$

$\Rightarrow (10x - 7x)/15 = 2$

$\Rightarrow 3x = 2 \times 15$

$\Rightarrow 3x = 30$

$\Rightarrow x = 30/3$

$\Rightarrow x = 10$

Putting the value of x in RHS and LHS, we get,

9. $2y + 5/3 = 26/3 - y$

Solution:

$2y + 5/3 = 26/3 - y$

$\Rightarrow 2y + y = 26/3 - 5/3$

$\Rightarrow 3y = (26 - 5)/3$

$\Rightarrow 3y = 21/3$

$\Rightarrow 3y = 7$

$\Rightarrow y = 7/3$

Putting the value of y in RHS and LHS, we get,

$\Rightarrow (2 \times 7/3) + 5/3 = 26/3 - 7/3$

$\Rightarrow 14/3 + 5/3 = 26/3 - 7/3$

$\Rightarrow (14 + 5)/3 = (26 - 7)/3$

$\Rightarrow 19/3 = 19/3$

$\Rightarrow$ LHS = RHS

10. $3m = 5m - 8/5$

Solution:

$3m = 5m - 8/5$

⇒ 5m – 3m = 8/5

⇒ 2m = 8/5

⇒ 2m × 5 = 8

⇒ 10m = 8

⇒ m = 8/10

⇒ m = 4/5

Putting the value of m in RHS and LHS, we get,

⇒ 3 × (4/5) = (5 × 4/5) – 8/5

⇒ 12/5 = 4 – (8/5)

⇒ 12/5 = (20 – 8)/5

⇒ 12/5 = 12/5

⇒ LHS = RHS